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China's regional disparities: Experience and policy☆

Shenggen Fan[a,1], **Ravi Kanbur**[b,*], **Xiaobo Zhang**[c]

[a] *International Food Policy Research Institute, 2033K Street, NW, Washington, DC 20006, United States*
[b] *Cornell University, Department of Applied Economics and Management, 309 Warren Hall, Ithaca, NY 14850, United States*
[c] *International Food Policy Research Institute, Washington, DC 20006, United States*

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Abstract This paper assesses the evolution of regional disparities in China, and brings information and trends up to date. Based on this assessment, it presents the broad outline of a strategy to harmonize growth and regional equity. We consider three elements of this strategy: infrastructure, social investment and protection, and governance reform. Specific policies within this broad strategy are then discussed in light of international experience. We also propose that the Chinese government take an experimental approach to interventions, as it did in the early period of agricultural reforms, learning lessons from the outcomes before scaling up.

1. Introduction

Since the start of reforms in 1978, spectacular economic growth and poverty reduction in China have been accompanied by sharp rises in inequality and increasingly frequent manifestations of social tension through unrest of various types. In response to these rising inequalities, in 2005 the Chinese government adopted an explicit objective of "harmonious development." A key dimension of harmonious development is balanced development *across regions*. Many strategies and investment plans have been developed to stimulate growth and improvement of living standards of residents in rural areas and in less developed Western China.

This paper reviews the evolution of regional disparities in China, and brings information and trends up to date with the latest data available (Section 2). It relates the evolution of spatial inequality over the years to the policy stances taken by the Chinese authorities during different phases since 1949. Based on this assessment, it then presents the broad outline of a strategy to harmonize growth and regional equity. We consider three elements of this strategy, under the heading of three categories of policy instruments: infrastructure, social investment and protection, and governance reform.

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* Corresponding author. Tel.: +1 607 255 7966; fax: +1 607 255 9984.
E-mail addresses: s.fan@cgiar.org (S. Fan), sk145@cornell.edu (R. Kanbur), x.zhang@cgiar.org (X. Zhang).
[1] Tel.: +1 202 862 6496.

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Specific policies within this broad strategy are then discussed in light of international experience (Section 3). We also propose that the Chinese government take an experimental approach to these interventions, as it did in the early period of agricultural reforms, by trying out different interventions and learning lessons from their outcomes before scaling up (Section 4).

2. Evolution of regional disparities and policy

2.1. Regional disparities in China

Regional disparities are a feature of the world, particularly of low and middle income countries. As Kanbur and Venables (2007) document, within country disparities are high and have been growing in the past quarter century. China is no exception to this global pattern. As shown in Table 1, in 2007, per capita GDP in the inland regions averaged 13,513 Yuan, or less than half of that in the coastal regions.[2] At the provincial level, the difference is even larger. Per capita GDP in Shanghai is 10 times as large as in Guizhou. If measured by per capita income, rural and urban residents in the inland regions earned only about two-thirds of their counterparts in the coastal regions. The rural–urban gap in per capita income is also enormous: 3 times in the coastal regions and 3.2 times in the inland regions.

Social indicators follow a similar pattern. The infant mortality rate (IMR) in the coast in 2005 was only 9 per 1000 live births, about half the level in the inland (18.8 per 1000 live births). In both coastal and inland areas, rural IMR was about twice of the urban IMR. Regarding literacy rate in 2005, coastal and urban areas also performed much better than inland and rural areas, respectively. For all three indicators, the rural–urban gap is wider in inland regions than in coastal regions.

How have regional disparities in their different dimensions evolved since the revolution? Table 2 lists major economic indicators for China from 1952 to 2008. Table 3 presents inequality measures and Fig. 1 graphs the evolution of China's regional inequality, as measured by the Gini and generalized entropy (GE) indices.[3] The two indices move in close relation to each other, matching the different phases of Chinese development remarkably well.

Over the past fifty years inequality has peaked three times—during the Great Famine, at the end of the Cultural Revolution, and in the current period of global integration. Similarly, there are three major troughs in the overall evolution of inequality—in 1952, right at the beginning of the data series; in 1967, at the end of the recovery from the Great Famine and before the effects of the Cultural Revolution set in; and in 1984, at the end of the rural reform period and the start of the expansion based on global integration. Overall, inequality seems to have been low when policy was encouraging to agriculture and the rural sector generally, and high when this sector was relatively neglected.

These patterns of income inequality can be disaggregated by decomposing overall inequality into sub-components and examining the evolution of these components. Because each year, we have observations at the provincial level with a rural–urban divide, the GE index can be decomposed into a "within rural–urban" and a "between rural and urban" component (we will call the latter rural–urban inequality). The overall GE and the between rural and urban component are shown in Table 3 and plotted separately in Figs. 1 and 2. Another key dimension of inequality in China, especially in the post-reform period, is that between inland and coastal provinces (Chen and Fleisher, 1996; and Zhang and Kanbur, 2001). The "between inland and coastal" component (we will call it inland–coastal inequality thereafter) is reported in Table 3 and graphed in Fig. 3. It is apparent that while the rural–urban gap accounts for a large share of overall inequality in the whole period, it is the inland–coastal disparity which has grown rapidly since the late 1970s when China started its economic reform.

For the evolution of inequality in non-income indicators, we mainly look at illiteracy rate and IMR. Table 4 presents the levels of these two indicators in 1981, 1990, 2000, and 2005, when population census and survey data are available. Both indicators have improved over this period. Similar to economic indicators, the rural–urban and coastal–inland gaps in social indicators are enormous. In 2005, both illiteracy rate and IMR in rural areas are more than twice of those in cities. The IMR in inland regions are as high as 18.8 per 1000 live births, more than twice of the level in coastal regions. Table 5 lists regional inequality in these two indicators. Both Gini and Theil indexes show that social inequality has increased steadily from 1981 to 2005. Overall, the regional pattern of social inequality closely mirrors that of income inequality.

The data in 1981, 1990 and 2000 are from the China Population Census in the corresponding years. The data in 2005 are obtained from 1% Population Survey (China National Bureau of Statistics, see http://www.stats.gov.cn/tjsj/ndsj/renkou/2005/renkou.htm). The 1981 census defines the illiteracy rate using age 12 as a benchmark, while the 1990 and 2000 censuses and the 2005 1% population survey refer to the people 15 years old and above. Therefore, they may not be totally comparable.

2.2. Policies and outcomes

The evolution of regional inequalities in China since the revolution has been influenced by the policy stances taken by the authorities. Table 2 shows the evolution of three economic policy variables – the share of heavy industry in gross value of total output (a measure of the bias against agriculture and China's comparative advantage), the ratio of trade volume to total GDP, and effective tariff rate (a measure of the degree of openness), and the ratio of local government expenditure to total government expenditure (a measure of fiscal decentralization). We argue below that there is a close association between these policies and regional disparities.[4]

In the 1950s, influenced by the experience and ideology of the Soviet Union and threatened by trade embargos, China placed the development of heavy industry as the top priority. To finance the capital-intensive heavy industry sector, the government had to suppress agricultural product prices so as to extract as much resources as

[2] The coastal region includes Beijing, Liaoning, Tianjin, Hebei, Shandong, Jiangsu, Shanghai, Zhejiang, Fujian, Guangdong and Guangxi. All the remaining provinces are classified as inland.

[3] The figures may be slightly different from those presented in Kanbur and Zhang (2005) for two reasons. In this paper, we use 1978 as a base year when calculating real per capita consumption instead of 1952 as used in the Kanbur and Zhang paper. Second, we include Hainan and Chongqing as separate observations after they were upgraded into provincial status.

[4] In Kanbur and Zhang (2005), an econometric analysis was conducted to establish the relationship between economic policies and observed regional inequality patterns up to 2000. The statistical analysis confirms the narrative account given in this section. Because the variables used in calculating the heavy industry development strategy is no longer published since 2000, in this paper, we could not update the regression to 2007.

Table 1 Regional economic development.

Province	GDP	Per capita GDP or income in 2007 (yuan)			IMR (number of deaths per 1000 live births)				Illiteracy rate (%)			
		Urban income	Rural income	Urban/Rural	Overall	Urban	Rural	Rural/Urban	Overall	Urban	Rural	Rural/Urban
Beijing	57431	24725	10662	2.3	0.8	0.0	4.5	n.a.	3.9	3.7	8.7	2.4
Tianjin	47972	19423	7911	2.5	2.3	1.7	3.4	2.0	4.8	4.5	8.2	1.8
Hebei	19363	13341	4796	2.8	8.4	4.4	10.0	2.3	7.2	4.6	8.7	1.9
Shanxi	16143	13119	4097	3.2	11.9	10.7	12.6	1.2	5.6	3.6	7.2	2.0
Inner Mongolia	25558	14433	4656	3.1	13.7	8.8	19.3	2.2	11.3	7.0	17.5	2.5
Liaoning	24645	14393	5577	2.6	5.0	4.8	5.3	1.1	4.8	3.7	7.1	1.9
Jilin	17211	12830	4933	2.6	5.7	7.6	4.4	0.6	5.9	4.3	8.0	1.9
Heilongjiang	18463	11581	4856	2.4	4.4	2.6	5.7	2.2	6.2	4.8	8.2	1.7
Shanghai	65473	26675	11440	2.3	2.8	3.2	0.0	0.0	5.2	5.8	13.0	2.2
Jiangsu	32985	18680	7357	2.5	11.1	12.5	9.3	0.7	10.0	7.4	14.1	1.9
Zhejiang	35730	22727	9258	2.5	9.3	5.2	14.6	2.8	12.0	8.5	16.9	2.0
Anhui	11180	12990	4203	3.1	18.2	14.2	20.3	1.4	19.2	11.8	24.1	2.0
Fujian	23663	17962	6196	2.9	10.5	6.4	14.4	2.2	12.9	8.5	18.3	2.1
Jiangxi	12204	12866	4697	2.7	17.8	9.4	22.8	2.4	10.5	5.8	13.5	2.4
Shandong	27148	16305	5641	2.9	8.5	7.0	9.8	1.4	12.4	8.8	16.0	1.8
Henan	15056	13231	4454	3.0	7.9	3.0	10.0	3.3	9.8	5.9	11.9	2.0
Hubei	14733	13153	4656	2.8	9.3	6.5	11.4	1.8	12.1	7.8	16.0	2.1
Hunan	13123	13821	4513	3.1	12.9	9.2	14.9	1.6	8.6	4.1	11.3	2.7
Guangdong	32142	19733	6400	3.1	11.3	7.2	17.9	2.5	6.0	4.4	9.8	2.2
Guangxi	11417	14146	3690	3.8	15.2	7.3	18.8	2.6	8.6	4.4	10.9	2.5
Hainan	13361	12608	4390	2.9	11.7	6.3	16.6	2.7	9.8	7.0	13.6	1.9
Chongqing	14011	14368	4126	3.5	9.8	12.3	7.9	0.6	11.7	6.5	16.6	2.5
Sichuan	11708	12633	4121	3.1	14.4	10.1	16.2	1.6	16.6	7.8	21.0	2.7
Guizhou	6742	11759	2797	4.2	52.3	25.4	61.4	2.4	21.4	9.6	26.1	2.7
Yunnan	9459	13250	3103	4.3	36.9	22.3	43.3	1.9	20.1	12.4	24.0	1.9
Tibet	11567	12482	3176	3.9	68.8	48.8	72.6	1.5	44.8	37.3	47.9	1.3
Shaanxi	12843	12858	3137	4.1	16.0	11.8	18.7	1.6	10.3	6.6	13.5	2.1
Gansu	9527	10969	2724	4.0	37.6	16.2	45.5	2.8	20.8	9.6	26.0	2.7
Qinghai	12809	11640	3061	3.8	43.1	8.5	57.2	6.7	24.1	10.1	33.7	3.4
Ningxia	12695	12932	3681	3.5	25.9	21.6	27.8	1.3	18.7	8.9	26.9	3.0
Xinjiang	16164	11432	3503	3.3	24.2	11.2	29.3	2.6	8.3	6.1	9.9	1.6
National average	22698	15781	4761	3.3	15.0	8.8	19.2	2.2	11.0	6.3	15.2	2.4
Coast	29183	18430	6046	3.0	9.0	6.7	11.5	1.7	8.8	5.7	12.8	2.2
Inland	13513	12932	4055	3.2	18.8	10.9	22.9	2.1	12.6	6.8	16.4	2.4

Note: Per capita GDP and income in current prices in 2007 are from China Statistical Yearbook (China National Statistical Bureau, 2008). The infant mortality rate (IMR) and illiteracy rate in 2005 are obtained from 1% Population Survey (China National Bureau of Statistics, see http://www.stats.gov.cn/tjsj/ndsj/renkou/2005/renkou.htm). The coastal and inland averages are calculated by authors.

Table 2 China: economic indicators, 1952–2008.

Year	GDP (Billion)	Total expenditure (Billion)	Tariff rate (%)	Trade ratio (%)	Decentralization (%)	HID (%)
1952	67.9	17.2	12.8	9.5	25.9	15.3
1955	91.0	26.3	7.6	12.1	23.5	19.7
1960	145.7	64.4	9.2	8.8	56.7	52.1
1965	171.6	46.0	10.3	6.9	38.2	30.4
1970	225.3	64.9	12.5	5.0	41.1	36.4
1975	299.7	82.1	10.2	9.7	50.1	40.2
1980	454.6	122.9	11.2	12.5	45.7	38.5
1985	901.6	200.4	16.3	22.9	60.3	38.6
1990	1866.8	308.4	6.2	29.8	67.4	38.3
1995	6079.4	682.4	2.6	38.7	70.8	33.1
2000	9921.5	1588.7	4.0	39.6	65.3	n.a.
2005	18321.7	3393.0	2.0	63.8	74.1	n.a.
2008	30067.0	6242.7	2.0	65.3	78.6	n.a.

Note: The data are from Comprehensive Statistical Data and Materials on 50 Years of New China (China National Bureau of Statistics, 2000) and various issues of the China Statistical Yearbook (China National Bureau of Statistics, various issues). GDP and total expenditures are in current prices. GOV and HID stand for gross output value and the percentage of gross output value of heavy industry in total GOV (a measure of heavy industry development strategy). Since 1999, China has stopped publishing gross output value figures.

possible. To ensure a stable labor supply in the agricultural sector, the government imposed the household registration system (*Hukou*) to confine people to work in their birth places. Meanwhile, the rationing system enabled urban residents to have access to food, housing, education, and guaranteed jobs in the state or collectively owned firms. The heavy industry-led development strategy climaxed at the Great Leap Forward, which eventually led to the disastrous Great Famine in 1959–1961. As attested in Fig. 2, the rural–urban gap peaked at the Great Famine period and in the end of the Cultural Revolution (1966–1976).

The strategy led to nearly three decades of stagnation in per capita income. For fear of renewed famine due to the dismal performance of agricultural production under the collective farming system, in the late 1970s the central government shifted its development strategies toward more labor intensive sectors, initially agriculture, and then increasingly export-oriented rural industries. The rural reform granted farmers the user right to cultivate their land and make their production decisions. The reform greatly stimulated farmers' production incentives and boosted their income. Consequently, both the rural–urban gap and overall inequality witnessed a sharp decline in this rural reform period as shown in Figs. 1 and 2.

Because of the dramatic increase in labor productivity under the rural reform, surplus labor developed in agriculture. In addition, rising income from rural residents drove up the demand for many manufactured goods. This created a good opportunity to develop labor-intensive town–village enterprises (TVEs). Not surprisingly, TVEs' share of gross domestic product (GDP) increased from 14.3% in 1980 to 37.5% in 1995 (Xu and Zhang, 2009). It is no exaggeration that the TVE was the major engine of China's growth and industrialization in the early stages of China's reforms and helped narrow the rural–urban gap.

Since the 1980s, openness has become a key development strategy. With openness to the outside world, the comparative advantage

Table 3 Regional inequality and decomposition: 1952–2007.

Year	Gini	Theil	Rural–urban	Inland–coast
1952	25.9	12.7	8.3	0.4
1955	23.5	10.1	6.6	0.2
1960	32.6	17.9	13.7	0.4
1965	28.2	14.0	11.1	0.1
1970	28.4	14.7	11.9	0.1
1975	29.0	15.9	13.6	0.3
1980	26.8	13.6	11.6	0.4
1985	23.3	9.6	7.2	0.6
1990	27.0	13.0	8.4	0.9
1995	30.7	16.2	10.4	1.3
2000	33.3	19.4	11.8	2.1
2005	35.0	22.0	13.7	3.0
2007	34.1	19.4	12.0	3.3

Note: The regional inequality measures are the Gini coefficient and Theil measure (GE index with $c = 1$), calculated by authors based on population weighted real per capita consumption at the provincial level in rural and urban areas. The data are from Comprehensive Statistical Data and Materials on 50 Years of New China (China National Bureau of Statistics, 2000) and various issues of the China Statistical Yearbook (China National Bureau of Statistics, various issues). Rural–urban and inland–coastal inequalities are defined as the between rural and urban and between inland and coastal components of the GE index.

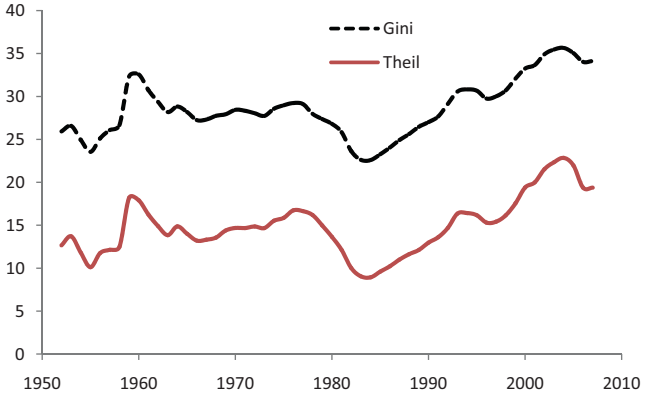

Figure 1 Regional inequality in per capita consumption.
Note: The regional inequality measures are the Gini coefficient and Theil index (with $c = 1$), calculated by authors based on population weighted real per capita consumption at the provincial level in rural and urban areas. The data are from Comprehensive Statistical Data and Materials on 50 Years of New China (China National Bureau of Statistics, 2000) and various issues of *China Statistical Yearbook* (China National Bureau of Statistics, various issues).

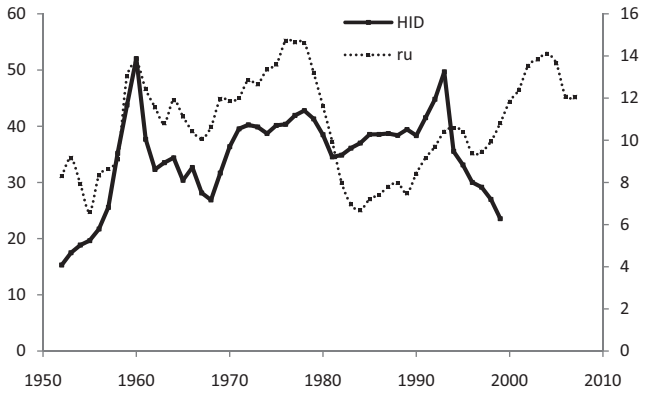

Figure 2 Heavy industry development strategy and rural–urban divides.

Note: The left vertical axis stands for heavy industry development strategy (HID), while the right one represents rural–urban disparity. The data are from Comprehensive Statistical Data and Materials on 50 Years of New China (China National Bureau of Statistics, 2000) and various issues of *China Statistical Yearbook* (China National Bureau of Statistics, various issues).

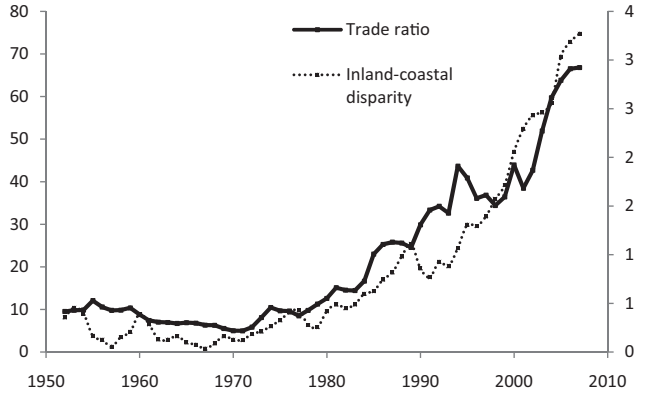

Figure 3 Openness and inland–coastal disparity.

Note: The left vertical axis stands for trade ratio, while the right one represents inland–coastal disparity. The data are from Comprehensive Statistical Data and Materials on 50 Years of New China (China National Bureau of Statistics, 2000) and various issues of *China Statistical Yearbook* (China National Bureau of Statistics, various issues).

Table 5 Regional inequality in illiteracy rate and infant mortality rate.

Year	Gini	Theil	Rural–urban	Inland–coast	Female–male
Illiteracy rate					
1981	30.3	14.5	17.8	0.2	59.0
1990	33.5	18.1	26.0	2.4	51.4
2000	36.3	21.4	25.8	1.1	44.6
2005	41.8	28.4	29.7	5.0	39.7
IMR					
1981	27.0	11.9	11.1	31.6	0.3
1990	29.6	14.1	16.7	38.1	1.6
2000	36.7	22.5	35.9	20.6	5.1
2005	40.0	28.4	18.5	18.2	2.8

Note: See Table 2 for data sources. The GE measure is parameterized so as to make it the Theil measure of inequality. National inequality in illiteracy rate and infant mortality rate are calculated using population at the provincial level with a rural–urban and gender divide. Rural–urban, inland–coastal, and female–male polarization indexes are defined as the ratio of between-group GE to total GE.

for the coastal regions began to reshape. The coastal regions benefited disproportionately from this openness due to their proximity to the international market and more developed economies, particularly Hong Kong and Taiwan. From 1999 to 2005, the central government's capital investment in the coastal region was 4696.7 billion Yuan (52.94%) to the central region's 2255.1 billion Yuan (25.42%) and the western region's 1920.4 billion Yuan (21.65%) (Yao, 2009). In less than two decades, China became the largest recipient of foreign direct investment among developing countries from a virtually closed economy in the late 1970s. As a result, the coastal regions experienced much more rapid growth, widening the coastal–inland gap in the reform period since the late 1970s (Fig. 3). In terms of trends, coastal–inland inequality showed a steep climb during this period.

After opening to trade, the central government also underwent a significant transition from a planned economy to a market economy, which was highlighted by several key market reforms. The success of rural reform in the early 1980s released a tremendous number of labor from agricultural production. The government introduced various policies to ease labor migration (Cai, 2010). First, during the initial stage of the rural reform, farmers were allowed to work in nonagricultural sectors even without migration. Second, more importantly, the *hukou* system was greatly loosened, enabling workers to migrate towards regions with more job opportunities,

Table 4 Illiteracy rate and infant mortality rate.

Year	National	Rural			Urban			Rural/Urban	Inland	Coast	Inland/Coast	F	M	F/M
		Total	F	M	Total	F	M							
Illiteracy rate														
1981	31.9	34.8	49.1	21.1	16.4	24.6	8.9	2.1	33.7	29.1	1.2	45.3	19.2	2.4
1990	22.2	26.2	37.1	15.7	12.0	18.4	6.1	2.2	23.8	19.6	1.2	31.9	13.0	2.5
2000	15.2	18.7	26.5	11.2	8.7	13.1	4.1	2.2	16.0	13.9	1.2	21.8	8.7	2.5
2005	11.0	15.2	21.8	8.5	6.3	9.7	2.8	2.4	12.6	8.8	1.4	16.1	5.9	2.8
IMR														
1981	36.6	39.1	38.1	40.0	23.6	22.4	24.8	1.7	44.5	24.4	1.8	35.7	37.6	1.0
1990	30.5	32.4	34.9	30.0	19.1	19.5	18.8	1.7	35.8	17.2	2.1	30.6	26.8	1.1
2000	24.1	30.8	36.7	25.8	11.0	13.5	10.3	2.8	26.8	13.6	2.0	28.4	20.5	1.4
2005	15.0	19.2	22.2	16.7	8.9	9.1	8.6	2.2	18.8	9.0	2.1	16.9	13.5	1.2

Note: F, female; M, male.

i.e. the coastal regions. Both policy change and structural transformations have generated one of the most dramatic migration dynamics in human history. In 1983, the number of rural migrants numbered only two million. By 2006, it reached over 132 million (Cai, 2010). The young and more educated are more likely to work off the farm (Maurer-Fazio, 1999 and de Brauw et al., 2002), thereby increasing returns to education investment.

Despite the massive migration, compared to developed countries, the share of population working in the agricultural sector is still high. But this suggests opportunities for institutional reforms to further improve labor market integration. Zhang and Tan (2007) estimate that reallocating even 1% of the agricultural labor force could increase national GDP by 0.9%.

Prices and quantities of inputs and outputs were rigidly controlled by the state before the reform. These controls were gradually relaxed over time. By the mid-1990s, prices and quantities of most products were determined by the market. Furthermore, the National People's Congress passed the "Law on Unjust Competition" in 1993, and in 2001 the State Council issued order 303 "Stipulation of the State Council to Forbid Regional Blockade in Market Activities." In addition, the government has made massive investments in highway and railway construction in the past two decades to lower transportation costs across regions (Huang and Luo, 2009). Contrary to expectations, however, urban versus rural regional inequality remained high, while the inland–coastal disparity has been increasing until 2007, the point up to which the latest data are available.

One plausible explanation for the fact that disparities increased in the wake of market development is that the capital market may have become more fragmented over time. Boyreau-Debray and Wei (2005) and Zhang and Tan (2007) found that the gap in the marginal product of capital across sectors and regions grew during the reform period. Poncet et al. (2008) discovered that Chinese firms follow a "political-pecking order" in attaining formal credit. The large inefficiency in capital allocation across sectors and regions also implies opportunities. According to the estimates of Zhang and Tan (2007), reallocating 1% of capital from urban to rural areas while holding total capital constant would lead to a 0.5% gain in national GDP.

To provide greater incentives for local governments to develop their local economies, the central government initiated fiscal reform by linking local expenditures more tightly to local revenues. Fiscal decentralization greatly enhanced inter-county competition and promoted economic growth (Cheung, 2008; Qian and Roland, 1998). However, with China's hierarchical governance structure, a region's government size is proportional to the number of registered inhabitants regardless of its local economic size. The responsibility of financing local public goods services, such as education, healthcare and government employee salaries, is the same across regions. Large regional variation in economic development levels means that the effective tax burden differs greatly across regions. The implicit high tax burden in poorer regions thwarts potential investment despite the fact that the marginal product of capital may be higher there. The interaction between the decentralized fiscal system and the centralized governance structure may lead to the observed pattern of "capital flying from poor inland regions to the rich coastal regions" (Zhang, 2006).

Overall, fiscal centralization gave the central government more discretionary power for regional redistribution, while decentralization provided more incentives for local governments to develop their economy at some cost of redistribution. As indicated in Fig. 4, the pattern of overall regional inequality largely coincides with the degree of decentralization in the past six decades.

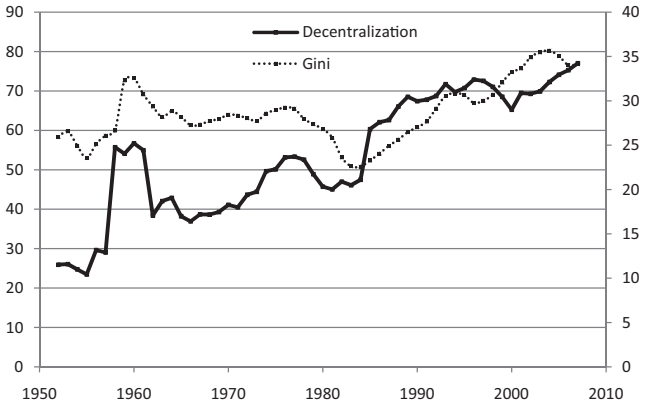

Figure 4 Decentralization and overall inequality (Gini coefficient). *Note*: The left vertical axis stands for the degree of decentralization, while the right one represents the Gini coefficient. The data are from Comprehensive Statistical Data and Materials on 50 Years of New China (China National Bureau of Statistics, 2000) and various issues of *China Statistical Yearbook* (China National Bureau of Statistics, various issues).

In congruence with the regional inequality in income and consumption presented here, social and welfare indicators have exhibited a similar pattern of disparity. Under central planning, the central government promoted universal basic education and called for each community to establish its own clinics for preventive healthcare. As a result, both education and health indicators improved dramatically in the period. As the collectives were dissolved in the late 1970s, so was the rural healthcare system. Under fiscal decentralization, however, funding for social programs (along with revenue generation) was delegated to the sub-national level. As a result, local governments were required to finance their own social programs. The per capita expenditure for subnational governments on education and healthcare in the coastal regions has been 1.5 times higher than those of the inland regions (Huang and Luo, 2009). Many local governments, particularly in the inland and rural areas, were forced to charge higher fees for basic and higher education to offset the shortfall of local revenues. Although the overall illiteracy and infant mortality rates have improved as a result of rapid income growth in the reform period as shown in Table 4, the regional distribution of these indicators has worsened as indicated in Table 5.

In large part as a response to the Asian Financial Crisis in the late 1990s, the central government initiated a "western development strategy (Go West)" to combat worsening regional inequality. Between 2000 and 2005, the central government started 70 main construction projects and the total amount of investment in the western regions reached one trillion Yuan (Yao, 2009). More than one third of the funds raised by long-term government bonds for construction were directed to the western regions during this time period, and from 2002 to 2005 the percent of funds from these bonds directed to the region reached 40% (Yao, 2009). From 2000 to 2005, the new roads built in the western region reached 220,000 km, with 6853 km of highways (Yao, 2009). By 2005, the central government invested 460 billion Yuan in construction projects in the western areas. Fiscal transfers and subsidies of 500 billion Yuan were also invested in the western areas (Chen and Lu, 2009).

Moreover, since January of 2006, the government has fully abolished agricultural taxation, for the first time in over two thousand years of Chinese history. The government also provided subsidies to grain producers to boost agricultural production and farmer income.

Furthermore, the government has gradually waived various fees for basic education in rural areas and in the past several years, a new rural collective medical scheme has been introduced. Khan and Riskin (2005) are one of the first to argue that income inequality had begun to level off using a large-scale household survey in 2002 and identified the western development strategy as the key explanation. It is interesting to note that regional inequality and the rural–urban gap based on aggregate per capita consumption at the provincial level in our calculation has also nosed down since 2005 (Table 3 and Fig. 1). Based on primary survey data in two poorest provinces, Guizhou and Gansu, Zhang, Yang, and Wang (2009) show that real wages have risen rapidly since 2003 in contrast to the stagnation of wage levels in the early period of 1995–2002, indicating an improvement in rural income.

3. Policies to address regional disparities

Going forward, the government has expressed a clear objective of "harmonious development," which includes addressing regional disparities. On the basis of the historical experience in China, as well as international experience, we now consider a number of policy instruments to achieve greater regional equity, under the headings of: (i) infrastructure investment and clustering, (ii) social protection investment, and (iii) governance reform.

3.1. Infrastructure investment and clustering

Recent studies on China have shown that investment in public infrastructure can be both an explanation for regional inequality and, therefore, part of a strategy for containing rising regional inequality. Ravallion (2005) establishes that there are indeed spatial agglomeration forces at play in explaining changes in individual level incomes, and the crucial role of local infrastructure (as well as local natural endowments) in explaining successful income growth.

Using the agricultural census data in 1998, Fan and Zhang (2004) show that rural infrastructure and education play an important role in explaining the large spatial difference in rural nonfarm productivity. Using detailed road data by type, Fan and Chan-Kang (2008) further confirm that investment in rural roads even have higher returns than investment in highways.

Fan et al. (2004) develop a comprehensive analysis of the role of different types of government expenditure on rural growth and poverty. Using a wide range of provincial data over a period of a quarter century, it builds and estimates a simultaneous equations econometric model to calculate economic returns, poverty reduction, and impact on regional inequality of different categories of public expenditure. It is shown that productivity is enhanced and poverty is reduced by increased expenditures for research and development, irrigation, education, roads, electricity, and telecommunications. The policy implications of this analysis are direct and strong. If the government wishes to manage growing regional inequality in China, then investing in public infrastructure in the lagging regions will have to be an important policy priority.

In the past several years under the western development strategy and the new socialism countryside movement, the government has made significant strides in investing in infrastructure, particularly through improvements of roads and railways in lagging regions. As shown in Fig. 1, overall regional inequality has leveled off and even slightly declined since the mid 2000s, a few years after the western development strategy took place. This provides some tentative evidence that the western development strategy may have played a role.

The demand for labor is also overtaking supply, creating a labor shortage in the past several years (The Economist, 2008; Zhang et al., 2009). There is an increasing pressure for firms to outsource production or relocate their business to the inland regions to access more abundant land and cheaper labor. The improvement in road networks enables many previously inaccessible interior regions to receive outsourcing orders from coastal production centers.

The rapid industrialization of the coastal regions is largely due to a successful cluster-based production model. A basic feature of cluster-based rural industrialization in the coastal region is the deep involvement of local governments, particularly township governments. At the initial stage when private ownership was officially recognized by the Chinese constitution, local governments provided de facto protection of private property rights (Xu and Zhang, 2009). Later on, township governments took strategic responsibilities for the overall development of industrial clusters. Therefore, it is also important to nurture cluster development in lagging regions. Some of the successful clustering experiences in the coastal regions may be relevant to the interior regions.

Thus, in broad strategic terms, China's strategy on infrastructure build up in the lagging regions is not very different to that in other countries. Chinese authorities have responded to the growing regional gaps by increasing infrastructure investment in the lagging regions. There is sufficient experience in China to learn from on this front. Research shows that the returns to infrastructure investment in lagging regions are in general high. However, there are two specific issues on which more detailed research is needed: (i) further analysis on what specific types of infrastructure have the highest returns in which specific regions, and (ii) the problem of very remote regions. In these regions, the marginal returns to infrastructure investment may decrease quickly as it can become extremely costly to build roads and other types of infrastructure—for these regions, a more feasible option may be to move people out of the fragile lands into areas with more jobs.

3.2. Social protection investment

Despite spectacular poverty reduction, perhaps the most impressive record of poverty reduction in history, poverty remains a major problem in China, with several hundred million people in poverty. Social protection investment is thus a key area of debate in China. In this section, we will address these concerns through the lens of regional disparity—arguing that social protection programs are particularly important in the lagging regions of rural areas and inland provinces.

Our analysis of the evolution of Chinese regional inequality has shown the importance of migration in mitigating these inequalities. Chinese authorities should systematically address impediments to migration, but sometimes social protection instruments can unwittingly become such impediments. For example, in the past several years, the government has mandated workers to participate in social security. One key challenge is that the social security benefits are not portable across provinces. Connecting the social security systems across provinces and making the benefits portable would greatly facilitate migration, and remains an important plan in a regionally oriented social protection strategy.

After several decades of negligence of social protection investments in lagging regions, China has made tremendous progress in reversing the trend in the past several years. First experimented with in the middle of the 1990s, the minimum support program was formally scaled up nationwide in 2007. By 2008, 42.8 million rural

Table 6 Progress in establishing rural social security.

	2006	2008
Extreme poverty line (yuan)	683	785
Total number of people below the line (million)	23.65	21.48
Total central spending on minimum support (hundred million)	42	94
No. of people covered (million)	15.09	42.84
Average amount per capita (yuan)	276	218
Minimum support transfer as a percentage of poverty line	40	28
CMS enrollment rate (%)	79	92
Per capita total contribution (yuan)	50	100
Percentage of government contribution (%)	80	80

Note: Compiled by authors based on official documents posted on the Chinese webpage (http://cn.chinagate.cn/society/2009-04/22/content_17653543.htm).

residents have been covered by the program (Table 6). However, the average amount per capita is still rather low at 218 Yuan, about 28% of the official extreme poverty line (785 Yuan).

Another major achievement is the establishment of the new rural collective medical service network (CMS). The aim is to ensure that rural residents have easy access to primary health care services. In 2003, China began to experiment with the new rural collective medical service network. Within just five years, 815 million rural residents, 91.5% of the total rural population, have enrolled in the network. The contribution is shared by various levels of government (80%) and individuals (20%). It has doubled from 50 Yuan in 2006 to 100 Yuan in 2008. The government has committed to significantly increase its contribution in the next few years. Since catastrophic illness is one of the most important forces driving a household into poverty, the effort of establishing a basic health insurance is greatly lauded. Certainly, the current contribution and coverage are much lower than the actual medical cost incurred. The reimbursement rate is extremely low, only at 30% in many cases. It is extremely difficult to establish a well functioning healthcare insurance system as witnessed by the current healthcare reform in the United States. A more pragmatic approach is needed, focusing on the most deprived areas to begin with.

Rural education in China faces serious challenges. Among the most critical is that the current education system does not address the needs of the vast number of migrant workers' children. Although some migrant schools have been licensed and officially recognized in recent years, migrant students still cannot take college entrance exams in the province of their parents' working place (Yao, 2009). As a result, a majority of migrants leave their children behind with grandparents. Under this arrangement, local governments in lagging regions bear a large share of the burden to educate the children of migrant workers while their parents work and pay taxes in developed regions. Because of more limited fiscal revenue, local governments in lagging regions generally invest less on education on a per student basis compared to their coastal counterparts. Meeting the cost of meals and boarding remains a great challenge for many poor families. The high boarding cost has been ranked as a key reason for students dropping out of secondary schools. To combat the high cost of boarding schools, a conditional cash transfer program in poorer regions, similar to the Progresa (now Oportunidades) program in Mexico, or a school feeding program similar to the "Food for Education" (FFE) program in Bangladesh, could simultaneously help alleviate the farmers' burden and improve children's nutritional status and educational attainment.

For many rural students graduating from secondary schools, the decision not to pursue higher education comes from the slim chance of being admitted to college and the related prohibitive cost. The government may also consider waiving the tuition fees for higher education for students in rural areas and providing more scholarships for children from poorer backgrounds.

3.3. Governance reform

Large regional disparities may require, and may also hold out opportunities for, governance reform. Because of China's unique governance structure and intricate institutional texture, measures related to governance reform can be more heterodox and context specific. Therefore, the lessons learned in other countries are less transferable to China than infrastructure development and social programs. More local trial and error and experimentation are needed in carrying out governance reform.

As discussed in the last section, fiscal decentralization has had severe distributional consequences because local government size and structure are not tailored to reflect the revenue and population base they represent. The conventional approaches to resolve this problem are to cut government size in the lagging regions and increase central fiscal transfers to these regions. In fact, Zhejiang Province has put all the counties under direct administration of the provincial government from the very beginning of the fiscal reform. As the most dynamic region in China, Zhejiang's experience provides a demonstration effect for other provinces. In the past several years, Hubei Province has followed similar reforms. Under direct administration, the county government has more discretionary power and fewer levels of government to deal with. Moreover, governance innovations at the county level are more likely to spillover to other counties in the same province instead of been limited only to the prefecture level.

Since the implementation of the western development strategy, the central government has increased its fiscal transfers to the inland and rural regions. However, large transfers may also create aid dependency. For example, the counties with nationally designated poverty status enjoy much more transfers. As a result, they do not have strong incentives to improve local investment environment to attract more private investment as other counties. Instead they turn their attention to seek more transfers from the upper level government (Zhang, 2006).

Apart from the above traditional policies, China has also tried many more heterodox policy measures. For example, the latest innovations in land development rights transfers in the coastal provinces and the use of police officers from the same regions as local migrants to fight crime in the coastal provinces show the feasibility of overcoming the rigidity of governance structure through social

entitlement exchanges (Luo and Zhang, 2009).[5] Another example is the pair-wise province-to-county aid strategy created by the central government after the Sichuan earthquake in 2008. Each county in the earthquake region was paired with an unaffected province, usually in a more developed coastal region. The province took full responsibility for the recovery and reconstruction in the designated county. The province government in the coastal region was evaluated based on their performance in terms of recovery and reconstruction in their assigned corresponding county.

In the planning economy era, the evaluation of cadres was based primarily on political performance. Since the economic reform started in the late 1970s, political conformity has been replaced by yardstick competition in key economic indicators and central mandates, such as GDP growth rate, fiscal revenue growth rates, and family planning (Li and Zhou, 2005). Since these indicators have been written into local leaders' contracts, the contents of the contract influence the behavior of local offices. The impact of a physical infrastructure can be easily observed right after it is built while it takes a much longer time, often beyond the four-year term of a county director or province governor, to witness the lasting impact of a social investment. The central government has adopted a reform to improve the evaluation indicators for local officials. In some areas, the social indicators have been included in cadres' contracts in a bid to encourage them to care more about social development. However, simply including more social indicators may not work because of the challenges in monitoring and evaluating social indicators. Recently, some regions have tried to reward a county governor to stay in his post for more than two terms at a higher pay scale. The purpose of longer tenure is to align local cadres' incentives with a more balanced long-term development goal. In the meantime, some intermediate outcomes or process variables can also be introduced, for example, citizen report cards, spending on education and health, and enrollment rates, to evaluate the annual performance of government officials.

Overall, institutional reform and innovation is identified as a key policy response to regional inequality. However, the particular reform measures can be heterodox and context specific. Some experiments are already under way. We have suggested some more in this section. Such an experimental approach, and learning from the lessons of the Chinese experience, appears to us a more fruitful route in this area than looking to other countries for experiences with governance.

4. Conclusion: strategies, experience, and experiments

China's rapid economic growth in the past three decades has been much discussed and celebrated. But this has not stopped the concern on the growing regional inequality. Rising inequality may lead to tensions within a country and compromise the prospect of long-term sustainable growth through a variety of social, political, and economic mechanisms (Kanbur and Lustig, 2000).

This study tries to unfold the driving forces behind the change in regional inequality over the past six decades. The evolution of inequality coincides with different phases of China's economic development strategies. In particular, the heavy industry-led development strategy played a key role in forming the enormous rural–urban gap in the planned economic era while openness and decentralization have contributed to the rapid increase in inland–coastal disparity in the recent period.

The global financial crisis dried out the demand for China's exports and resulted in millions of workers losing their jobs. However, as recent Chinese history attests, crises often beget reforms. The crisis provides a unique opportunity for the government to rebalance its growth strategies, which it has already begun to do. Previously, the central government has failed to put more investment into the rural and inland regions under its export-oriented and urban-biased development strategy. But the recent stimulus package is largely geared towards improving the inland economy by building long over-due infrastructure and setting up basic social safety nets in the previously neglected rural and inland regions. Looking forward, the current crisis may prove to be a turning point in rebalancing China's regional disparities.

It is important to emphasize that, like many features of China today; regional disparities pose both challenges as well as opportunities. The gains from further factor market reform may be enormous. Policies that facilitate the relocation of labor from low-productive sectors and regions to higher-productive counterparts would have a large payoff. A shift of capital investment from SOEs and cities to private firms and rural areas would help balance China's investment-driven growth model and boost citizens' living standards. Strengthening financing mechanisms for private investment in inland China also offers high pay offs to overall economic growth and regional inequality reduction.

Apart from factor market reform, we have considered three categories of instruments: infrastructure, social protection and investment, and governance. On infrastructure, China has indeed been engaged in significant activity over the past three decades and especially in recent years. Investment in infrastructure to link coastal and interior regions and within lagging regions has a high payoff in promoting economic growth in lagging regions and reducing regional gaps. However, lessons are to be learnt from the Chinese experience on which types of infrastructure have the highest rates of return in which specific regions.

The second category of instruments we consider fall broadly under the heading of social protection investment. There is a lively debate on these issues in China, but a perspective of regional inequality sheds new light on it. For example, the regional perspective highlights the importance of portability of social security benefits, to ease migration and thus mitigate the buildup of regional inequalities. The importance of building up human capital in the lagging regions also turns attention to some important international experience. In addition, providing education and health services for rural migrants in urban centers is also essential to facilitate more migration. Over the past two decades, social protection and social investment in many countries have converged in the shape of conditional cash transfers targeted to building up the human capital of the poorest. This is an area in which China does not have much experience in recent history, and it is an area in which Chinese policy makers could indeed learn from international experience in countries such as Brazil, Mexico, and India. However, because of large differences in context from other countries, China must adopt an experimental approach

[5] The conversion of land from agricultural to non-agricultural use is regulated by the central government through a permit system. Because of large regional differences in economic development, the shadow price of land for nonfarm use varies greatly across regions. This creates a space for exchanging permits—the more developed regions purchase the land use permits from the less development regions. These exchanges have occurred in China, in particular within provinces in the coastal regions. For example, in 2002, the capital city of Zhejiang Province, Hangzhou, purchased the development rights of 3000 mu of lands, at a price of 60,000 RMB Yuan per mu, from Haining City, a less developed region in Zhejiang Province.

when introducing these programs and redesign as lessons are learnt.

Regarding governance reform, we argue that China should continue to conduct its own experiments in governance reform, especially in light of the finding that provincial level decentralization has contributed to growing regional inequalities. Improvements in governance at the county level and below in the lagging regions hold out greater promise. We have suggested a number of policy options, such as twinning of advanced and lagging counties to advance learning, and changing the contract of cadres in advanced and lagging regions to better reflect social objectives in lagging regions. But once again, experimentation should be the mind set as these options are introduced.

Pragmatism, trial and error, evidence-based policymaking, and experimentation with small-scale policy reforms that are later scaled up, are all key features of China's reforms. Most successful reforms in China have experienced pilot experiments and impact evaluations before being scaled up.

Such experimentation has been particularly important in overcoming several major obstacles to effective reform in China, related to the country's size, its diversity, and the history and structure of its hierarchical political system. For a large and diverse economy like China, it is very difficult to derive a single one-size-fits-all blueprint for reform simply by applying textbook economic theories. Instead, trial and error processes can help discover local best practices. At the same time, the large regional differences imply opportunities for institutional and policy experimentation. The particular reform measures can be heterodox and context specific. Most of the reform measures which have turned out to be so successful in the past several decades originated from within provinces and townships and followed the spirit of experimentation before being scaled up.

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